## Alpha Viruses nsp2 alignment

## CLUSTAL W (1.82) multiple sequence alignment

```
SFV_nsp2
RRV_nsp2
               GVVETPRSALKVTAQPNDVLLGNYVVLSPQTVLKSSKLAPVHPLAEQVKIITHNGRAGGY 60
               GVVETPRNALKVTPQERDQLIGAYLILSPQTVLKSEKLTPIHPLAEQVTIMTHSGRSGRY 60
ONV nsp2
               GIVETPRGAIKVTAQPSDLVVGEYLVLTPQAVLRSQKLSLIHALAEQVKTCTHSGRAGRY 60
SinV nsp2
               ALVETPRGHVRIIPQANDRMIGQYIVVSPNSVLKNAKLAPAHPLADQVKIITHSGRSGRY 60
VEEV nsp2
               GSVETPRGLIKVTSYAGEDKIGSYAVLSPQAVLKSEKLSCIHPLAEQVIVITHSGRKGRY 60
               . ***** ::: : : : * * :::*::**: **: *.**:**
SFV nsp2
               QVDGYDGRVLLPCGSAIPVPEFQALSESATMVYNEREFVNRKLYHIAVHGPSLNTDEENY 120
RRV nsp2
               PVDRYDGRVLVPTGAAIPVSEFQALSESATMVYNEREFINRKLHHIALYGPALNTDEENY 120
ONV nsp2
               AVEAYDGRVLVPSGYAIPQEDFQSLSESATMVFNEREFVNRKLHHIAMHGPALNTDEESY 120
               AVEPYDAKVLMPAGGAVPWPEFLALSESATLVYNEREFVNRKLYHIAMHGPAKNTEEEQY 120
SinV_nsp2
VEEV nsp2
               AVEPYHGKVVVPEGHAIPVQDFQALSESATIVYNEREFVNRYLHHIATHGGALNTDEEYY 120
                *: *..:*:: * *:* :* :*****:*:** *:*** :* : **:** *
SFV nsp2
               EKVRAERTDAEYVFDVDKKCCVKREEASGLVLVGELTNPPFHEFAYEGLKIRPSAPYKTT 180
               EKVRAERAEAEYVFDVDKRTCVKREDASGLVLVGDLINPPFHEFAYEGLKIRPATPFQTT 180
RRV_nsp2
ONV nsp2
               ELVRVEKTEHEYVYDVDQKKCCKREEATGLVLVGDLTSPPYHEFAYEGLKIRPACPYKTA 180
SinV_nsp2
               KVTKAELAETEYVFDVDKKRCVKKEEASGLVLSGELTNPPYHELALEGLKTRPAVPYKVE 180
VEEV_nsp2
               KTVKPSEHDGEYLYDIDRKQCVKKELVTGLGLTGELVDPPFHEFAYESLRTRPAAPYQVP 180
                      : **:*:*: * *:* .:** * *:* .**: * *:* * *: *::.
SFV_nsp2
RRV_nsp2
               VVGVFGVPGSGKSAIIKSLVTKHDLVTSGKKENCQEIVNDVKKHRGKGTSRENSDSILLN 240
               VIGVFGVPGSGKSAIIKSVVTTRDLVASGKKENCQEIVNDVKKQRGLDVTARTVDSILLN 240
ONV nsp2
               VIGVFGVPGSGKSAIIKNLVTRQDLVTSGKKENCQEISNDVMRQRKLEISARTVDSLLLN 240
SinV nsp2
               TIGVIGTPGSGKSAIIKSTVTARDLVTSGKKENCREIEADVLRLRGMQITSKTVDSVMLN 240
               TIGVYGVPGSGKSGIIKSAVTKKDLVVSAKKENCAEIIRDVKKMKGLDVNARTVDSVLLN 240
VEEV nsp2
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               .:** *.***** ** :***.*. **
               GCRRAVDILYVDEAFACHSGTLLALIALVKPRSKVVLCGDPKQCGFFNMMQLKVNFNH-- 298
SFV nsp2
RRV nsp2
               GCRRGVENLYVDEAFACHSGTLLALIAMVKPTGKVILCGDPKQCGFFNLMQLKVNFNH-- 298
               GCNKPVEVLYVDEAFACHSGTLLALIAMVRPRQKVVLCGDPKQCGFFNMMQMKVNYNH-- 298
ONV nsp2
               GCHKAVEVLYVDEAFACHAGALLALIAIVRPRKKVVLCGDPMQCGFFNMMQLKVHFNHPE 300
SinV_nsp2
VEEV nsp2
               GCKHPVETLYIDEAFACHAGTLRALIAIIRPK-KAVLCGDPKQCGFFNMMCLKVHFNH-- 297
               SFV nsp2
               -NICTEVCHKSISRRCTRPVTAIVSTLHYGGKMRTTNPCNKPIIIDTTGQTKPKPGDIVL 357
RRV nsp2
               -DICTQVLHKSISRRCTLPITAIVSTLHYQGKMRTTNLCSAPIQIDTTGTTKPAKGDIVL 357
ONV nsp2
               -NICTQVYHKSISRRCTLPVTAIVSSLHYESKMRTTNEYNQPIVVDTTGITKPEPGDLVL 357
               KDICTKTFYKYISRRCTQPVTAIVSTLHYDGKMKTTNPCKKNIEIDITGATKPKPGDIIL 360
SinV nsp2
VEEV nsp2
               -EICTQVFHKSISRRCTKSVTSVVSTLFYDKRMRTTNPKETKIVIDTTGSTKPKQDDLIL 356
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               .:***. :* ****** .:*:**
SFV nsp2
               TCFRGWAKQLQLDYRGHEVMTAAASQGLTRKGVYAVRQKVNENPLYAPASEHVNVLLTRT 417
RRV nsp2
               TCF--WVKQLQIDYRGHEVMTAAASQGLTRKGVYAVRQKVNENPLYAPSSEHVNVLLTRT 415
ONV_nsp2
               TCFRGWVKQLQIDYRGNEVMTAAASQGLTRKGVYAVRQKVNENPLYAPTSEHVNVLLTRT 417
SinV nsp2
               TCFRGWVKQLQIDYPGHEVMTAAASQGLTRKGVYAVRQKVNENPLYAITSEHVNVLLTRT 420
VEEV nsp2
               TCFRGWVKQLQIDYKGNEIMTAAASQGLTRKGVYAVRYKVNENPLYAPTSEHVNVLLTRT 416
               SFV nsp2
               EDRLVWKTLAGDPWIKVLSNIPQGNFTATLEEWQEEHDKIMKVIEGPAAPVDAFQNKANV 477
RRV nsp2
               ENRLVWKTLSGDPWIKVLTNIPKGDFSATLEEWQEEHDNIMNALRERSTAVDPFQNKAKV 475
ONV nsp2
               EGKLTWKTLSGDPWIKILONPPKGDFKATIKEWEAEHASIMAGICNHOMAFDTFONKANV 477
               EDRLVWKTLQGDPWIKQPTNIPKGNFQATIEDWEAEHKGIIAAINSPTPRANPFSCKTNV 480
SinV nsp2
VEEV_nsp2
               EDRIVWKTLAGDPWIKILTAKYPGNFTATIEEWQAEHDAIMRHILERPDPTDVFQNKANV 476
                                     *:* **:::*: ** *: :
               CWAKSLVPVLDTAGIRLTAEEWSTIITAFKEDRAYSPVVALNEICTKYYGVDLDSGLFSA 537
SFV nsp2
RRV nsp2
               CWAKCLVQVLETAGIRMTAEEWDTVL-AFREDRAYSPEVALNEICTKYYGVDLDSGLFSA 534
ONV nsp2
               CWAKCLVPILDTAGIKLSDRQWSQIVQAFKEDRAYSPEVALNEICTRIYGVDLDSGLFSK 537
               CWAKALEPILATAGIVLTGCQWSELFPQFADDKPHSAIYALDVICIKFFGMDLTSGLFSK 540
SinV_nsp2
VEEV_nsp2
               CWAKALVPVLKTAGIDMTTEQWNTVD-YFETDKAHSAEIVLNQLCVRFFGLDLDSGLFSA 535
               ****.* :* **** :: :*. :
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SFV_nsp2	PKVSLYYENNHWDNRPGGRMYGFNAATAARLEARHTFLKGQWHTGKQAVIAER 590
RRV nsp2	QSVSLYYENNHWDNRPGGRMYGFNREVARKFEQRYPFLRGKMDSGLQVNVPER 587
ONV nsp2	PLISVYYADNHWDNRPGGKMFGFNPEVALMLEKKYPFTKGKWNINKQICITTR 590
$\overline{\text{SinV}}$ nsp2	QSIPLTYHPADSARPVAHWDNSPGTRKYGYDHAIAAELSRRFPVFQ-LAGKGTQLDLQTG 599
VEEV nsp2	PTVPLSIRNNHWDNSPSPNMYGLNKEVVRQLSRRYPQLPRAVATGRVYDMNTG 588
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SFV_nsp2	KIQPLSVLDNVIPINRRLPHALVAEYKTVKGSRVEWLVNKVRGYHVLLVSEYNLALPRRR 650
RRV_nsp2	KVQPFNAECNILLLNRRLPHALVTSYQQCRGERVEWLLKKLPGYHLLLVSEYNLALPHKR 647
ONV_nsp2	KVDEFNPETNIIPANRRLPHSLVAEHHSVRGERMEWLVNKISGHHMLLVSGHNLILPTKR 650
SinV nsp2	RTRVISAQHNLVPVNRNLPHALVPEYKEKQPGPVKKFLNQFKHHSVLVVSEEKIEAPRKR 659
VEEV nsp2	TLRNYDPRINLVPVNRRLPHALVLHHNEHPQSDFSSFVSKLKGRTVLVVG-EKLSVPGKK 647
<del></del>	. *:: **.**:** :: ::.:. :*:*. :: * ::
SFV nsp2	VTWLSPLNVTGADRCYDLSLGLPADAGRFDLVFVNIHTEFRIHHYQQCVDHAMKLQMLGG 710
RRV nsp2	VFWIAPPHVSGADRIYDLDLGLPLNAGRYDLVFVNIHTEYRTHHYQQCVDHSMKLQMLGG 707
ONV nsp2	VTWVAPLGTRGADYTYNLELGLPATLGRYDLVVINIHTPFRIHHYQQCVDHAMKLQMLGG 710
SinV nsp2	IEWIAPIGIAGADKNYNLAFGFPPQA-RYDLVFINIGTKYRNHHFQQCEDHAATLKTLSR 718
VEEV nsp2	VDWLSDQPEATFRARLDLGIPGDVPKYDIVFINVRTPYKYHHYQQCEDHAIKLSMLTK 705
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SFV_nsp2	DALRLLKPGG-ILMRAYGYADKISEAVVSSLSRKFSSARVLRPDCVTSNTEVFLLFSNFD 769
RRV_nsp2	DSLHLL-PGGSLLIRAYGYADRVSEMVVTALARKFSAFRVLRPACVTSNTEVFLLFTNFD 766
ONV_nsp2	DSLRLLKPGGSLLIRAYGYADRTSERVISVLGRKFRSSRALKPQCITSNTEMFFLFSRFD 770
SinV_nsp2	SALNCLNPGGTLVVKSYGYADRNSEDVVTALARKFVRVSAARPDCVSSNTEMYLIFRQLD 778
VEEV_nsp2	KACLHLNPGGTCVSIGYGYADRASESIIGAIARQFKFSRVCKPKSSHEETEVLFVFIGYD 765
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SFV_nsp2	NGK-RPSTLHQMNTKLSAVYAGEAMHTAGC 798
RRV_nsp2	NGR-RAVTLHQANQRLSSMFACNGLHTAGC 795
ONV_nsp2	NGR-RNFTTHVMNNQLNAVYAGLATR-AGC 798
SinV nsp2	NSRTRQFTPHHLNCVISSVYEGTRDGVGA- 807
VEEV_nsp2	RKA-RTHNPYKLSSTLTNIYTGSRLHEAGC 794
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